

CLAIMS

1. An adhesive article comprising:

a release liner comprising a release surface, a molding layer and a second surface;

5 a continuous layer of adhesive having a first surface, a second surface and end edges, wherein the first surface of the adhesive is adhered to the release surface of the release liner;

a first pattern of first non-adhesive material forms having a first surface and a second surface; and

10 a second pattern of second non-adhesive material forms having a first surface and a second surface, wherein the second pattern partially overlaps the first pattern; at least one of the first and second patterns is at least partially embedded in the release surface and molding layer of the release liner; the first surface of each of the two patterns is in contact with the release surface of the release liner, the  
15 second surface of each of the two patterns is in contact with the adhesive layer; and the first surface of at least a portion of the first pattern of non-adhesive material forms is in a plane that is different from the plane of the first surface of at least a portion of the second pattern of non-adhesive material forms.

20 2. The adhesive article of claim 1 wherein each of the non-adhesive material forms independently has an average thickness of about 30 nanometers to about 100  $\mu\text{m}$ .

25 3. The adhesive article of claim 1 wherein each of the non-adhesive material forms independently has an average thickness of about 3  $\mu\text{m}$  to about 30  $\mu\text{m}$ .

30 4. The adhesive article of claim 1 wherein each pattern of non-adhesive material forms independently is applied by printing, vacuum metallization or sputtering.

5. The adhesive article of claim 1 wherein at least one of the non-adhesive materials independently comprises at least one printing ink, UV curable ink or coalescing ink.

5 6. The adhesive article of claim 1 wherein each pattern of non-adhesive material forms independently comprises a plurality of dots, lines or combinations thereof.

10 7. The adhesive article of claim 1 wherein each pattern of non-adhesive material forms independently comprises a plurality of lines having an average width of from about 12  $\mu\text{m}$  to about 250  $\mu\text{m}$  and an average thickness of from about 30 nanometers to about 100  $\mu\text{m}$ .

15 8. The adhesive article of claim 1 wherein the each pattern of non-adhesive material forms independently comprises a plurality of lines, and wherein at least 50% of the lines intersect the end edges of the adhesive layer.

20 9. The adhesive article of claim 1 wherein each pattern of non-adhesive material forms comprises a plurality of non-intersecting lines, and wherein the lines from the first pattern and the lines from the second pattern intersect to form a grid pattern.

25 10. The adhesive article of claim 1 wherein the adhesive layer comprises a pressure sensitive adhesive or a heat-activated adhesive.

11. The adhesive article of claim 1 wherein at least one of the first and second non-adhesive material comprises a porous non-adhesive material.

30 12. The adhesive article of claim 11 wherein the porous non-adhesive material comprises an elastomer.

13. The adhesive article of claim 1 wherein the adhesive is a pressure sensitive adhesive.

14. The adhesive article of claim 1 wherein the release surface of the release liner has a textured or matte surface.

5 15 The adhesive article of claim 14 wherein the first surface of the adhesive layer has a textured surface that is complementary to the textured surface of the release liner.

10 16. The adhesive article of claim 1 wherein the release surface of the release liner has a Sheffield roughness of at least about 50.

17. The adhesive article of claim 1 further comprising a facestock adhered to the second surface of the adhesive layer.

15 18. The adhesive article of claim 1 further comprising a second release liner adhered to the second surface of the adhesive layer.

19. The adhesive article of claim 1 wherein the second surface of the release liner has a release coating thereon.

20 20. The adhesive article of claim 19 further comprising a facestock having a first and second surface wherein the first surface is in contact with the second surface of the adhesive layer and a second adhesive layer having a first and second surface wherein the first surface of the second adhesive layer is in contact with the second surface of the facestock.

25 21. The adhesive article of claim 20 further comprising a second release liner adhered to the second surface of the second adhesive layer.

30 22. An adhesive article comprising:  
a release liner comprising a release surface, a molding layer and a second surface;

a continuous layer of adhesive having a first surface, a second surface and end edges, wherein the first surface of the adhesive is adhered to the release surface of the release liner; and

a first embossed pattern in the release surface and the molding layer,  
5 and

a second pattern of a non-adhesive material forms wherein the second pattern partially overlaps the embossed first pattern and a portion of the second pattern at least partially fills in portions of the first embossed pattern, said embossed pattern and the non-adhesive material forms having an exposed first surface and a  
10 second surface, wherein the exposed first surface at least a portion of the embossed pattern is in a plane that is different from the plane of the exposed first surface of at least a portion of the non-adhesive material forms.

23. The adhesive article of claim 22 wherein the embossed pattern is  
15 formed by applying a non-adhesive material to the release surface, embedding the non-adhesive material into the release surface and the molding layer, and removing the non-adhesive material.

24. The adhesive article of claim 22 wherein the non-adhesive material  
20 forms have an average thickness of about 30 nanometers to about 100  $\mu\text{m}$ .

25. The adhesive article of claim 22 wherein the non-adhesive material forms have an average thickness of about 3  $\mu\text{m}$  to about 30  $\mu\text{m}$ .

26. The adhesive article of claim 22 wherein the embossed pattern has an  
25 average depth of about 30 nanometers to about 100  $\mu\text{m}$ .

27. The adhesive article of claim 22 wherein the embossed pattern has an  
average depth of about 3 to about 30  $\mu\text{m}$ .

28. The adhesive article of claim 22 wherein the second pattern of non-  
30 adhesive material forms is applied by printing, vacuum metallization or sputtering.

29. The adhesive article of claim 22 wherein the non-adhesive material comprises at least one printing ink, UV curable ink or coalescing ink.

30. The adhesive article of claim 22 wherein the second pattern of non-adhesive material forms comprises a plurality of dots, lines or combinations thereof.

31. The adhesive article of claim 22 wherein the second pattern of non-adhesive material forms comprises a plurality of lines having an average width of from about 12  $\mu\text{m}$  to about 250  $\mu\text{m}$  and an average thickness of from about 30 nanometers to about 100  $\mu\text{m}$ .

32. The adhesive article of claim 22 wherein the second pattern of non-adhesive material forms comprises a plurality of lines, and wherein at least 50% of the lines intersect the end edges of the adhesive layer.

33. The adhesive article of claim 22 wherein the second pattern of non-adhesive material forms comprises a plurality of non-intersecting lines.

34. The adhesive article of claim 22 wherein the adhesive layer comprises a pressure sensitive adhesive or a heat-activated adhesive.

35. The adhesive article of claim 22 wherein at least one of the first and second non-adhesive material comprises a porous non-adhesive material.

36. The adhesive article of claim 35 wherein the porous non-adhesive material comprises an elastomer.

37. The adhesive article of claim 22 wherein the adhesive comprises a pressure sensitive adhesive.

38. The adhesive article of claim 22 wherein the release surface of the release liner has a textured surface, the textured surface having a random texture, a patterned texture, or a combination thereof.

39. The adhesive article of claim 22 wherein a facestock is applied to the second surface of the adhesive layer.

40. The adhesive article of claim 38 wherein the first surface of the adhesive layer has a textured surface that is complementary to the textured surface of the release liner.

41. The adhesive article of claim 22 further comprising a second release liner adhered to the second surface of the adhesive.

42. The adhesive article of claim 22 wherein the second surface of the release liner has a release coating thereon.

43. The adhesive article of claim 42 further comprising a facestock having a first and second surface wherein the first surface is in contact with the second surface of the adhesive; and a second adhesive layer having a first and second surface wherein the first surface of the second adhesive layer is in contact with the second surface of the facestock.

44. The adhesive article of claim 44 further comprising a second release liner adhered to the second surface of the second adhesive layer.

45. A method of making an adhesive article comprising:

(a) providing a release liner comprising a molding layer having a release surface and a second surface;

(b) applying a first pattern of a first non-adhesive material to a first portion of the release surface;

(c) applying a second pattern of a second non-adhesive material to a second portion of the release surface, wherein the second pattern partially overlaps the first pattern;

(d) embedding at least one of the first or second non-adhesive materials into the molding layer; and

(e) applying an adhesive layer having a first surface and a second surface onto the release surface of the release liner, wherein the first surface of the adhesive layer is adhered to the exposed portions of the non-adhesive materials and to the release surface of the release liner.

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46. The method of claim 45 wherein (f) a facestock is applied to the second surface of the adhesive layer.

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47. The method of claim 46 wherein the embedding comprises applying heat and pressure to the non-adhesive materials and the release liner using a roller or platen.

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48. The method of claim 45 wherein the second surface of the release liner is a release surface or a release surface is applied to the second surface of the release liner.

49. The method of claim 48 further comprising applying a second adhesive layer to the release surface on the second surface of the release liner.

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50. The method of claim 45 wherein at least one of the first pattern and the second pattern comprises a plurality of lines wherein at least about 50% of the liner intersect the end edges of the adhesive layer.

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51. The method of claim 45 wherein the adhesive layer comprises a pressure sensitive adhesive or a heat-activated adhesive.

52. A method of making an adhesive article comprising:

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- (a) providing a release liner comprising a molding layer having a release surface and a second surface;
- (b) embossing a first pattern in a first portion of the release surface;
- (c) applying a second pattern of second non-adhesive material forms to a second portion of the release surface wherein the second pattern partially

overlaps and at least partially fills the embossed first pattern in the molding layer;  
and

(d) applying an adhesive layer having a first surface and a second surface  
onto the release surface of the release liner wherein the first surface of the adhesive  
layer is adhered to the exposed portions of the non-adhesive materials and to the  
release surface of the release liner.

53. The method of claim 51 wherein the first embossed pattern is provided  
by

(a) applying a first pattern of first non-adhesive material forms to a first  
portion of the release liner,

(b) embedding the first pattern of the first non-adhesive material forms into  
the molding layer, and

(c) removing the first non-adhesive material from the molding layer and  
leaving an embossed pattern corresponding to the first pattern of first non-adhesive  
material forms.

54. The method of claim 52 wherein a facestock is applied to the second  
surface of the adhesive layer.

55. An adhesive article comprising:

a continuous layer of adhesive having a first surface, a second surface  
and end edges, and

a first pattern of first non-adhesive material forms and a second  
pattern of second non-adhesive material forms wherein the second pattern partially  
overlaps the first pattern; at least one of said first and second patterns is at least  
partially embedded in the first surface of the adhesive layer; each of said first and  
second patterns has an exposed first surface and an opposite second surface that  
is in contact with the adhesive; the first surface of at least a portion of the first  
pattern of non-adhesive forms is in a plane that is different from the plane of the first  
surface of at least a portion of the second pattern of non-adhesive forms; and at  
least a portion of the first pattern protrudes from the first surface of the adhesive  
layer.



56. The adhesive article of claim 55 further comprising a facestock adhered to the second surface of the adhesive layer.

57. The adhesive article of claim 55 further comprising a release liner  
5 adhered to the second surface of the adhesive layer.

58. An adhesive article comprising:  
a continuous layer of adhesive having a first surface and a second surface, and

10 a first embossed pattern in the first surface of the adhesive layer, and  
a second pattern of non-adhesive material forms, wherein the second pattern at least partially overlaps the first pattern and is embedded in the first surface of the adhesive layer; each of said embossed pattern and second pattern has an exposed first surface wherein the first surface of at least a portion of the  
15 second pattern of non-adhesive material is in a plane that is different from the plane of the first surface of at least another portion of the second pattern of non-adhesive forms.

59. The adhesive article of claim 58 further comprising a facestock  
20 adhered to the second surface of the adhesive layer.

60. The adhesive article of claim 58 wherein the first surface of at least a portion of the first embossed pattern is in a plane that is different from the plane of at least another portion of the first embossed pattern.  
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